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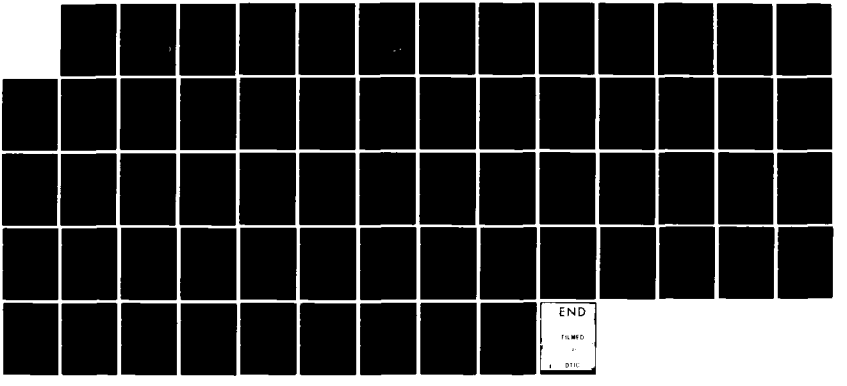

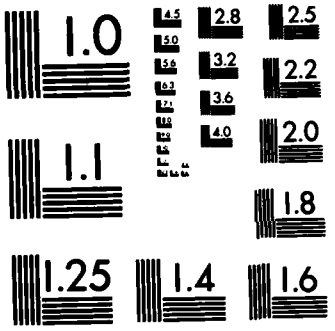

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This report describes the Computer programs used for the labelling of numerous articles necessary for the Ames Assay. These articles include sterility, quality, positive, negative, dilutimal controls along with labels for the specific compounds. These programs help assure compliance with the FDA Good Laboratory Practices Act.

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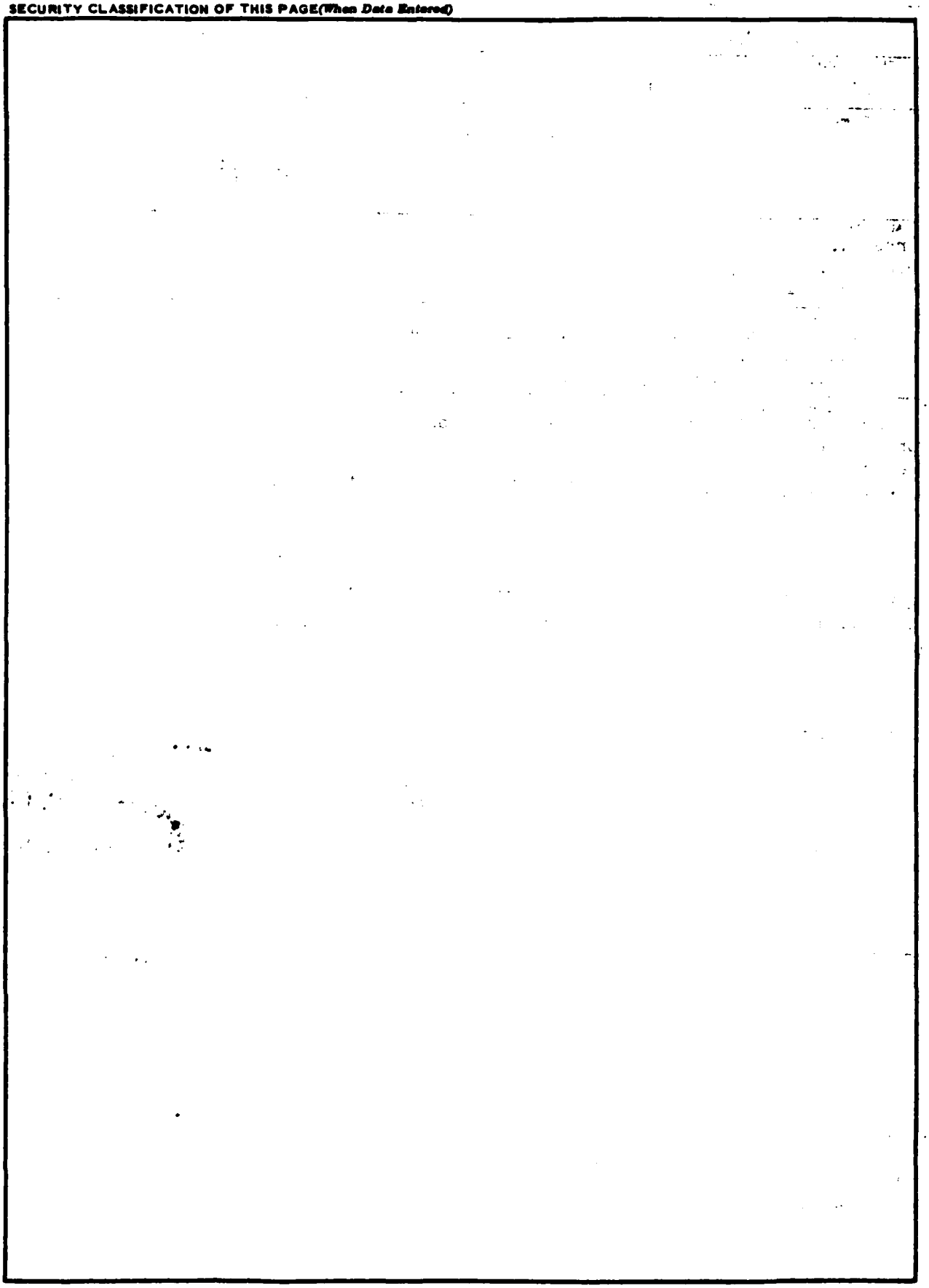

TECHNICAL NOTE NO. 82–40TN

COMPUTER–ASSISTED LABELLING IN MUTAGENICITY TESTING

The Ames Salmonella/Mammalian Microsome Mutagenicity Assay

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DIVISION OF RESEARCH SUPPORT

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The Ames Salmonella/Mammalian Microsome Mutagenicity Assay--Jederberg et al

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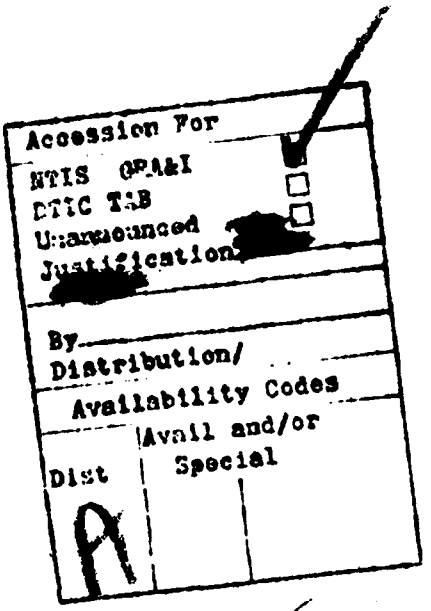
PREFACE

This is the first in a series of Technical Notes on the utilization of the computer facilities at Letterman Army Institute of Research to assist in mutagenicity testing as part of the institute's toxicology program. These reports will detail the use of the computer in labelling articles, recording, storing, and retrieving data, and data analysis. Both the Salmonella/Mammalian microsome (Ames) and the Drosophila melanogaster sex-linked recessive lethal mutagenicity assays will be covered. These reports are not intended to cover in detail the rationale or the technique involved in mutagenicity testing by these assays.



ACKNOWLEDGMENTS

The authors express their appreciation to the Information Sciences Group for making the computer facilities readily available and to those who have made suggestions for improving the utility of the programs described herein.

COMPUTER–ASSISTED LABELLING IN MUTAGENICITY TESTING:
The Ames Salmonella/Mammalian Microsome Mutagenicity Assay--Jederberg, Sauers, and Pulliam

The Ames Salmonella/Mammalian Microsome Mutagenicity Assay is one of a standard bank of tests used for the detection of mutagenic agents (1). It involves the use of several genetically altered strains of Salmonella typhimurium - each with a specific mutation in the histidine operon. The test is based on a reverse mutation to a wild-type, prototrophic phenotype induced by the test compound. In addition to the reversion, activation by microsomal enzymes is also used to determine if any potential promutagens exist.

This type of assay requires the labelling of agar plates with information concerning the dilution of the test substance, the particular bacterial mutant, the presence or absence of microsomal enzymes, and replicates. Since all assay components are added to a tube of top agar prior to plating, a corresponding number of labels must also be generated. This requires the production of approximately 400 labels per test substance and approximately 300 labels for controls per assay. These items are currently hand-labelled in most laboratories. We have designed and implemented a FORTRAN V program (with subroutines) for the rapid generation of the large number of unique labels. The use of this system has greatly reduced the time spent identifying material, guaranteed accurate correspondence between the top agar tube and the target plate, and insured continuity from the initiation to the termination of the assay.

This technical note describes the programs used for labelling the numerous articles used in performing th assay. For a complete discussion of the nature of the required materials for the assay, the reader is referred to reference 1.

PROGRAM DESCRIPTION

The main program (Appendix A) calls a series of subroutines to generate sterility, quality, positive and negative control, test compound, and dilutional control labels (Appendix B through K). The labels are generated in the sequence that they will be used in setting up the assay.

Sample runs appear in Figures 1 through 11 (Appendix L). As the program prepares the labels, it displays a message (Figure 1). Up to ten test compounds are allowed and each is designated with an

alphanumeric field of up to ten characters in length (AN/10). Up to ten dilutions of each test compound are allowed. (In the figure, the underlined characters are entered at the time of program execution by the user.)

The text for sterility control labels appears in Figures 2 through 5. Sterility controls include (a) minimal glucose agar (MGA) and the nutrient broth (Figure 2), without the presence of mammalian microsome solution (S-9), (b) the top agar and S-9 mix (Figure 3), (c) the diluent and histidine-biotin mixture (Figure 4), and each of the bacterial cultures (Figure 5).

A check is made on the characteristic nutrient requirements of the strains used (Figure 6).

Quality controls check the characteristic responses of the mutant strains to chemical and light stimuli (Figure 7).

The response of each strain to known positive mutagens is validated (Figure 8).

The test strains are grown, both, with no S-9 and with S-9 to check the spontaneous mutation rates (Figure 9).

At the begining of each test compound, the diluent used for that compound is checked, both, with and without S-9 (Figure 10).

Each test compound is checked with each tester strain of microorganism in the presence and absence of S-9 at each dilution of the test compound (samples represented in Figure 11).

At the end of the run the negative and sterility controls are run again.

After the text for all the labels has been generated and stored in the file labelled "DLABELS" the user is so notified and may print the labels out on an appropriate device (usually a printer with tractor feed). The test is formatted so that the labels should be printed on continuous-feed single-width stock material. These may be obtained from most distributors of computer supplies and office forms. The labels are standard 1 x 3.5 inches.

DISCUSSION

By utilizing the program and subroutines presented in this report, we have realized a significant saving in time for the preparation of materials for the Salmonella/Mammalian microsome mutagenicity assay. The labels have also been of great help in maintaining order and

uniformity while running the assay. The labelling has been beneficial in maintaining conformity with the rigid requirements of the Food and Drug Administration's Good Laboratory Practices Act (2).

CONCLUSION

None

RECOMMENDATION

None

REFERENCES

1. AMES, B.N., J. McCANN and E. YAMASAKI. Methods for detecting carcinogens and mutagens with the salmonella/mammalian microsome mutagenicity assay. Mut Res 31:347-364, 1975.

2. FOOD AND DRUG ADMINISTRATION. Good Laboratory Practices Regulations. Federal Register 43(163):37336-37403, 1978.

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APPENDICES

Appendix A.
AMESLABELS.FR

```
C ---  PROGRAM NAME:          AMESLABELS.FR
C ---  WRITTEN BY:            WARREN W JEDERBERG
C ---  PURPOSE:               TO PREPARE LABELS FOR THE AMES
C ---          MUTAGENICITY ASSAY.
C ---  SUBROUTINES:
C ---           SCLW.FR-STERILITY CONTROL LABELS WRITTEN
C ---                SUPPORTED BY SLAB.FR
C ---           QCLW.FR-QUALITY CONTROL LABELS WRITTEN
C ---           PCLW.FR-POSITIVE CONTROL LABELS WRITTEN
C ---           NCLW.FR-NEGATIVE CONTROL LABELS WRITTEN
C ---           ATLW.FR-TEST COMPOUND LABELS WRITTEN
C ---                KLBW.FR SUPPORTS ATLW.FR
C ---                NLBW.FR SUPPORTS ATLW.FR
C ---                DLCLW.FR SUPPORTS ATLW.FR
C ---           TLCW.FR-END RUN STERILITY CONTROL LABELS WRITTEN
C ---                SUPPORTED BY SLAB.FR
C ---

      DELETE "ALABELS"
      OPEN 1, "ALABELS", ATT = "SOP"
      TYPE
      TYPE " READY TO MAKE AMESLABELS:"
      TYPE " WAIT ................."
      DIMENSION LT(5)
      LT(1) = "ST"
      LT(2) = "AR"
      LT(3) = "T "
      LT(4) = "RU"
      LT(5) = "N "


      CALL SCLW(LT)
      CALL QCLW

      CALL PCLW
      CALL NCLW(LT)
      CALL ATLW

      LT(1) = "EN"
      LT(2) = "D "
      LT(3) = "RU"
      LT(4) = "N "
      LT(5) = "  "

      CALL NCLW(LT)
      CALL TLCW(LT)
```

Appendix A.
(CONTINUED)

```
TYPE " ALL LABELS ARE READY IN 'ALABELS'"
CLOSE 1
END
```

Appendix B.
SCLW.FR

```
C --- PROGRAM NAME:        SCLW.FR
C --- WRITTEN BY:          WARREN W JEDERBERG
C --- PURPOSE:             THIS SUBROUTINE WRITES THE STERILITY CONTROL
C ---          LABELS FOR THE AMES MUTAGENICITY ASSAY. SUPPORTED BY SLAB.FR.
C ---
      SUBROUTINE SCLW (LT)
      DIMENSION NBUG(2), LT(5)

      DO 99 I=1,2
      WRITE (1,4)
    4 FORMAT (2X,"STERILITY CONTROL",/,2X,"MGA PLATE",/,2X,
     1"ADD WILD TYPE",/,2X,"DO NOT ADD S-9",/,2X,"24 HRS",/)
   99 CONTINUE

      DO 100 I=1,2
      WRITE (1,5)
    5 FORMAT (2X,"STERILITY CONTROL",/,2X,"MGA PLATE",/,2X,
     1"ADD NO ORGANISM",/,2X,"DO NOT ADD S-9",/,2X,"24 HRS",/)
  100 CONTINUE

      DO 101 I=1,2
      WRITE (1,6)
    6 FORMAT (2X,"STERILITY CONTROL",/,2X,"NUTRIENT BROTH",/,2X,
     1"ADD NO ORGANISM",/,2X,"DO NOT ADD S-9",//)
  101 CONTINUE


      DO 10 I=1,4
      WRITE (1,1) LT
    1 FORMAT (2X,"STERILITY CONTROL",/,2X,"TOP AGAR",/,
     12X,"ADD NO ORGANISMS",/,2X,"DO NOT ADD S-9",/,2X,5A2,/)
   10 CONTINUE

      DO 20 I=1,4
      WRITE (1,2) LT
    2 FORMAT (2X,"STERILITY CONTROL",/,2X,"TOP AGAR",/,
     12X,"ADD NO ORGANISMS",/,2X," ADD S-9",/,2X,5A2,/)
   20 CONTINUE

      DO 30 I=1,4
      WRITE (1,3) LT
    3 FORMAT (2X,"STERILITY CONTROL",/,2X,"DILUENT",/,
     12X,"ADD NO ORGANSISMS",/,2X,"DO NOT ADD S-9",/,2X,5A2,/)
   30 CONTINUE
```

Appendix B.
(CONTINUED)

```
      DO 102 I=1,2
      WRITE (1,7) LT
    7 FORMAT (2X,"STERILITY CONTROL",/,2X,"HIS-BIO MIX",/,2X,
     1"ADD NO ORGANISMS",/,2X,"DO NOT ADD S-9",/,2X,5A2,/)
  102 CONTINUE


C     TA 98

      NBUG(1) = "  "
      NBUG(2) = "98"
      CALL SLAB(NBUG,LT)

C     TA 100

      NBUG(1) = " 1"
      NBUG(2) = "00"
      CALL SLAB(NBUG,LT)

C     TA 1535

      NBUG(1) = "15"
      NBUG(2) = "35"
      CALL SLAB(NBUG,LT)

C     TA 1537

      NBUG(2) = "37"
      CALL SLAB(NBUG,LT)

C     TA 1538

      NBUG(2) = "38"
      CALL SLAB(NBUG,LT)

C --- READY MESSAGE
      TYPE " STERILITY CONTROL LABELS ARE READY IN 'ALABELS'"
      RETURN
      END
```

Appendix C.
QCLW.FR

```
C --- PROGRAM NAME:          QCLW.FR
C --- WRITTEN BY:            WARREN W JEDERBERG
C --- PURPOSE:               THIS SUBROUTINE WRITES THE QUALITY CONTROL
C ---         LABELS FOR THE AMES MUTAGENICITY ASSAY.
C ---
      SUBROUTINE QCLW
      DIMENSION NBUG(2)

      WRITE (1,1)
 1    FORMAT(2X,"0.1 M HIS  & 0.5 BIOTIN",/,
     12X,"TA: 1535, 1537, 1538",/,
     22X,"DO NOT ADD S-9",/,2X,"DO NOT ADD TOP AGAR",//)

      WRITE (1,2)
 2    FORMAT(2X,"0.1 M HIS & 0.5 BIOTIN",/,
     12X,"TA: 98, 100, WT",/,
     22X,"DO NOT ADD S-9",/,2X,"DO NOT ADD TOP AGAR",//)

      WRITE (1,3)
 3    FORMAT(2X,"0.5 BIOTIN ONLY",/,
     12X,"TA: 1535, 1537, 1538",/,
     22X,"DO NOT ADD S-9",/,2X,"DO NOT ADD TOP AGAR",//)

      WRITE (1,4)
 4    FORMAT(2X,"0.5 BIOTIN ONLY",/,
     12X,"TA: 98, 100, WT",/,
     22X,"DO NOT ADD S-9",/,2X,"DO NOT ADD TOP AGAR",//)

      WRITE (1,5)
 5    FORMAT(2X,"QUALITY CONTROL",/,2X,"UV LIGHT: 6 SECONDS",/,
     12X,"TA: 1535, 1537, 1538",/,
     22X,"DO NOT ADD S-9",/,2X,"DO NOT ADD TOP AGAR",/)

      WRITE (1,6)
 6    FORMAT(2X,"QUALITY CONTROL",/,2X,"UV LIGHT: 6 SECONDS",/,
     12X,"TA: 98, 100, WT",/,
     22X,"DO NOT ADD S-9",/,2X,"DO NOT ADD TOP AGAR",/)

      NBUG(1) = "  "
      NBUG(2) = "98"

      WRITE (1,7) NBUG
      WRITE (1,7) NBUG
```

Appendix C.
(CONTINUED)

```
      NBUG(1) = " 1"
      NBUG(2) = "00"

      WRITE (1,7) NBUG
      WRITE (1,7) NBUG

      NBUG(1) = "15"
      NBUG(2) = "35"

      WRITE (1,7) NBUG
      WRITE (1,7) NBUG

      NBUG(2) = "37"

      WRITE (1,7) NBUG
      WRITE (1,7) NBUG

      NBUG(2) = "38"

      WRITE (1,7) NBUG
      WRITE (1,7) NBUG

7     FORMAT(2X,"QUALITY CONTROL",/,2X,"CRYSTAL VIOLET",/,
     12X,"TA",1X,2A2,/,2X,"AND TOP AGAR",//)

      NBUG(1) = "  "
      NBUG(2) = "98"

      WRITE (1,8) NBUG

      NBUG(1) = " 1"
      NBUG(2) = "00"


      WRITE(1,8) NBUG

      NBUG(1) = "15"
      NBUG(2) = "37"


      WRITE (1,8) NBUG

8     FORMAT (2X,"QUALITY CONTROL",/,2X,"AMPICILLIN",/,
     12X,"TA",1X,2A2,/,2X,"DO NOT ADD TOP AGAR",//)

C --- END MESSAGE
      TYPE " QUALITY CONTROL LABELS ARE READY IN 'ALABELS'"

      RETURN
      END
```

Appendix D.
PCLW.FR

```
C --- PROGRAM NAME:          PCLW.FR
C --- WRITTEN BY:            WARREN W. JEDERBERG
C --- PURPOSE:               THIS SUBROUTINE WRITES THE POSITIVE
C ---          CONTROL LABELS FOR THE AMES MUTAGENICITY ASSAY.
C ---
      SUBROUTINE PCLW
      DIMENSION KOMP(5),NBUG(2)

C     BP 2 UG
      NBUG(1) = "  "
      NBUG(2) = "98"

      KOMP(1) = "BP"
      KOMP(2) = "  "
      KOMP(3) = "2 "
      KOMP(4) = "UG"
      KOMP(5) = "  "

      DO 10 I=1,6
      WRITE (1,1) NBUG,KOMP
    1 FORMAT(2X,"POSITIVE CONTROL",/,2X,"TA",1X,2A2,/,
     12X,5A2,/,2X," ADD S-9",//)
   10 CONTINUE

      NBUG(1) = " 1"
      NBUG(2) = "00"

      DO 20 I=1,6
      WRITE (1,1) NBUG,KOMP
   20 CONTINUE

      NBUG(1) = "15"
      NBUG(2) = "37"

      DO 30 I=1,6
      WRITE (1,1) NBUG, KOMP
   30 CONTINUE

      NBUG(2) = "38"

      DO 40 I=1,6
      WRITE (1,1) NBUG, KOMP
   40 CONTINUE
```

```
C     DMBA 20 UG
      KOMP(1) = "DM"
      KOMP(2) = "BA"
      KOMP(3) = " 2"
      KOMP(4) = "O "
      KOMP(5) = "UG"

      NBUG(1) = "  "
      NBUG(2) = "98"

      DO 50 I=1,6
      WRITE (1,1) NBUG,KOMP
   50 CONTINUE

      NBUG(1) = " 1"
      NBUG(2) = "00"

      DO 60 I=1,6
      WRITE (1,1) NBUG,KOMP
   60 CONTINUE

      NBUG(1) = "15"
      NBUG(2) = "37"

      DO 70 I=1,6
      WRITE (1,1) NBUG,KOMP
   70 CONTINUE

      NBUG(2) = "38"

      DO 80 I=1,6
      WRITE (1,1) NBUG,KOMP
   80 CONTINUE

C     AF 2 UG
      KOMP(1) = "AF"
      KOMP(2) = " 2"
      KOMP(3) = " U"
      KOMP(4) = "G "
      KOMP(5) = "  "

      NBUG(1) = "  "
      NBUG(2) = "96"

      DO 90 I=1,6
      WRITE (1,1) NBUG, KOMP
   90 CONTINUE
```

Appendix D.
(CONTINUED)

```
      NBUG(1) = " 1"
      NBUG(2) = "00"

      DO 100 I=1,6
      WRITE (1,1) NBUG, KOMP
  100 CONTINUE

       NBUG(1) = "15"
       NBUG(2) = "38"

      DO 110 I=1,6
      WRITE (1,1) NBUG, KOMP
  110 CONTINUE

C     MNNC 2 UG
      KOMP(1) = "MN"
      KOMP(2) = "NG"
      KOMP(3) = " 2"
      KOMP(4) = " U"
      KOMP(5) = "G "

      NBUG(1) = " 1"
      NBUG(2) = "00"

      DO 120 I=1,6
      WRITE (1,2) NBUG, KOMP
    2 FORMAT (2X,"POSITIVE CONTROL",/,2X,"TA",1X,2A2,/,
     12X,5A2,/2X,"DO NOT ADD S-9",//)
  120 CONTINUE

      NBUG(1) = "15"
      NBUG(2) = "35"

      KOMP(4) = "O "
      KOMP(5) = "UG"

      DO 130 I=1,6
      WRITE (1,2) NBUG, KOMP
  130 CONTINUE

C --- READY MESSAGE
      TYPE " POSITIVE CONTROL LABELS ARE READY IN 'ALABELS'"
      RETURN
      END
```

Appendix E.
NCLW.FR

```
C --- PROGRAM NAME:          NCLW.FR
C --- WRITTEN BY:            WARREN W JEDERBERG
C --- PURPOSE:               THIS SUBROUTINE PREPARES THE NEGATIVE
C ---          CONTROL LABELS FOR THE AMES MUTAGENICITY ASSAY.
C ---
      SUBROUTINE NCLW(LT)
      DIMENSION NBUG(2), LT(5)

C     NO S-9

      NBUG(1) = "  "
      NBUG(2) = "98"

      DO 10 I=1,6
      WRITE (1,1) NBUG, LT
    1 FORMAT (2X,"NEGATIVE CONTROL",/,2X,"TA",1X,2A2,/,
     12X,"DO NOT ADD S-9",/,2X,5A2,//)
   10 CONTINUE

      NBUG(1) = " 1"
      NBUG(2) = "00"

      DO 20 I=1,6
      WRITE (1,1) NBUG,LT
   20 CONTINUE

      NBUG(1) = "15"
      NBUG(2) = "35"

      DO 30 I=1,6
      WRITE (1,1) NBUG,LT
   30 CONTINUE

      NBUG(2) = "37"

      DO 40 I=1,6
      WRITE (1,1) NBUG,LT
   40 CONTINUE

      NBUG(2) = "38"

      DO 50 I=1,6
      WRITE (1,1) NBUG,LT
   50 CONTINUE
```

Appendix E.
(CONTINUED)

```
C       WITH S-9

        NBUG(1) = "  "
        NBUG(2) = "98"

        DO 60 I=1,6
        WRITE (1,2) NBUG,LT
    2   FORMAT(2X,"NEGATIVE CONTROL",/,2X,"TA",1X,2A2,/
       12X," ADD S-9",/,2X,5A2,//)
   60   CONTINUE

        NBUG(1) = " 1"
        NBUG(2) = "00"

        DO 70 I=1,6
        WRITE (1,2) NBUG,LT
   70   CONTINUE

        NBUG(1) = "15"
        NBUG(2) = "35"

        DO 80 I=1,6
        WRITE (1,2) NBUG,LT
   80   CONTINUE

        NBUG(2) = "37"

        DO 90 I=1,6
        WRITE (1,2) NBUG,LT
   90   CONTINUE

        NBUG(2) = "38"
        DO 100 I=1,6
        WRITE (1,2) NBUG,LT
  100   CONTINUE

C --- READY MESSAGE
        TYPE " NEGATIVE CONTROL LABELS ARE READY IN 'ALABELS'"
        RETURN
        END
```

Appendix F.
ATLW.FR

```
C --- PROGRAM NAME:          ATLW.FR
C --- WRITTEN BY:            WARREN W JEDERBERG
C --- PURPOSE:               THIS SUBROUTINE WRITE THE TEST COMPOUND
C ---         LABELS FOR THE AMES MUTAGENCITY ASSAY. IT USES THE
C --          SUBROUTINES DLCLW.FR, KLBW.FR, NLBW.FR.
C ---
      SUBROUTINE ATLW
      DIMENSION NBUG(2), KN(5)
C     GET THE NUMBER OF TEST COMPOUNDS
      TYPE
      TYPE " HOW MANY TEST COMPOUNDS ?"
      ACCEPT "*",NC


C     WRITE LABELS FOR EACH COMPOUND
      DO 10 I=1,NC
      TYPE
      WRITE (10,1) I
    1 FORMAT (" WHAT IS COMPOUND #:",1X,I2,1X,"(AN/10) ?")
      READ (11,2) (KN(IL), IL=1,5)
    2 FORMAT (5A2)
C     HOW MANY DILUTIONS FOR THIS COMPOUND
   20 CONTINUE
      TYPE
      TYPE " HOW MANY DILUTIONS FOR THIS COMPOUND ?"
      ACCEPT "*",N

      IF (N.GT.10) GO TO 30

C     MAKE DILUTIONAL CONTROL LABELS
      CALL DLCLW (KN)

      DO 100 J=1,N



C     BY BUG - NO S-9

      NBUG(1) = "  "
      NBUG(2) = "98"

      CALL KLBW (NBUG,KN,J)

      NBUG(1) = " 1"
      NBUG(2) = "00"
```

Appendix F.
(CONTINUED)

```
      CALL KLBW (NBUG,KN,J)

      NBUG(1) = "15"
      NBUG(2) = "35"

      CALL KLBW (NBUG,KN,J)

      NBUG(2) = "37"

      CALL KLBW (NBUG,KN,J)

      NBUG(2) = "38"

      CALL KLBW (NBUG,KN,J)

C     BY BUG WITH S-9

      NBUG(1) = "  "
      NBUG(2) = "98"

      CALL NLBW (NBUG,KN,J)

      NBUG(1) = " 1"
      NBUG(2) = "00"

      CALL NLBW (NBUG,KN,J)

      NBUG(1) = "15"
      NBUG(2) = "35"

      CALL NLBW (NBUG,KN,J)

      NBUG(2) = "37"

      CALL NLBW (NBUG,KN,J)

      NBUG(2) = "38"

      CALL NLBW (NBUG,KN,J)

  100 CONTINUE
```

Appendix F.
(CONTINUED)

```
      WRITE (11,3) I
    3 FORMAT (" LABELS FOR TEST COMPOUND #:",1X,I2,1X,"ARE READY IN 'ALABELS'")
   10 CONTINUE
      RETURN
C     ERROR NOTE
   30 CONTINUE
      TYPE
      TYPE "** ERROR ** ERROR **"
      TYPE "NO MORE THAN 10 ALLOWED"
      GO TO 20
      END
```

Appendix G.
DLCLW.FR

```
C --- PROGRAM NAME:          DLCLW.FR
C --- WRITTEN BY:            WARREN W JEDERBERG
C --- PURPOSE:               THIS SUBROUTINE PREPARES THE DILUTIONAL
C ---       CONTROL LABELS IN SUPPORT OF ATLW.FR FOR THE
C ---       AMES MUTAGENICITY ASSAY.
C ---
      SUBROUTINE DLCLW (KN)
      DIMENSION KN(5)

C     NO S-9
      DO 30 I=1,4
      WRITE (1,1) KN
    1 FORMAT (2X,"DILUTIONAL CONTROL",/,2X,"COMPOUND:",1X,5A2,/,
     12X,"ADD NO ORGANISMS",/,
     12X,"DO NOT ADD S-9",//)
   30 CONTINUE

C     WITH S-9
      DO 50 I=1,4
      WRITE (1,2) KN
    2 FORMAT (2X,"DILUTIONAL CONTROL",/,2X,"COMPOUND:",1X,5A2,/,
     12X,"ADD NO ORGANISMS",/,
     12X,2X," ADD S-9",//)
   50 CONTINUE

C --- READY MESSAGE
      TYPE
      TYPE " DILUTIONAL CONTROL LABELS ARE READY IN 'ALABELS'"
      RETURN
      END
```

Appendix H.
KLBW.FR

```
C --- PROGRAM NAME:          KLBW.FR
C --- WRITTEN BY:            WARREN W JEDERBERG
C --- PURPOSE:               THIS SUBROUTINE SUPPORTS THE SUBROUTINE
C ---         ATLW.FR IN WRITING THE TEST COMPOUND LABELS FOR THE
C ---         AMES MUTAGENICITY ASSAY.
C ---
      SUBROUTINE KLBW(NBUG,KN,J)
      DIMENSION NBUG(2),KN(5)

C     NO S-9
      DO 20 JK=1,6
      WRITE (1,1) NBUG, (KN(I) I=1,5),J
    1 FORMAT (2X,"TEST SUBSTANCE",/,2X,"TA",1X,2A2,/,
     12X,"COMPOUND:",1X,5A2,/,2X,"DILUTION:",1X,I2./,
     22X,"DO NOT ADD S-9",/)
   20 CONTINUE
      RETURN
      END
```

Appendix I.
NLBW.FR

```
C --- PROGRAM NAME:        NLBW.FR
C --- WRITTEN BY:          WARREN W JEDERBERG
C --- PURPOSE:             THIS SUBROUTINE SUPPORTSTHE SUBROUTINE
C ---          ATLW.FR IN WRITING THE TEST COMPOUND LABELS FOR THE
C ---          AMES MUTAGENICITY ASSAY.
C ---
      SUBROUTINE NLBW (NBUG,KN,J)
      DIMENSION NBUG(2),KN(5)

C     WITH S-9
      DO 20 JK=1,6
      WRITE (1,1) NBUG,(KN(I) I=1,5),J
    1 FORMAT (2X,"TEST SUBSTANCE",/,2X,"TA",1X,2A2,/,
     12X,"COMPOUND:",1X,5A2,/,2X,"DILUTION:",1X,I2,/,
     22X," ADD S-9",/)
   20 CONTINUE
      RETURN
      END
```

Appendix J.
TLCW.FR

```
C --- PROGRAM NAME:        TLCw.FR
C --- WRITTEN BY:          WARREN W JEDERBERG
C --- PURPOSE:             THIS SUBROUTINE WRITES THE STERILITY CONTROL
C ---          LABELS FOR THE AMES MUTAGENICITY ASSAY. SUPPORTED BY SLAB.FR.
C ---          (END RUN)
C ---
      SUBROUTINE TLCW (LT)
      DIMENSION NBUG(2), LT(5)

      DO 10 I=1,4
      WRITE (1,1) LT
    1 FORMAT (2X,"STERILITY CONTROL",/,2X,"TOP AGAR",/,
     12X,"ADD NO ORGANISMS",/,2X,"DO NOT ADD S-9",/,2X,5A2,/)
   10 CONTINUE

      DO 20 I=1,4
      WRITE (1,2) LT
    2 FORMAT (2X,"STERILITY CONTROL",/,2X,"TOP AGAR",/,
     12X,"ADD NO ORGANISMS",/,2X," ADD S-9",/,2X,5A2,/)
   20 CONTINUE



      DO 30 I=1,2
      WRITE (1,3) LT
    3 FORMAT (2X,"STERILITY CONTROL",/,2X,"HIS-BIO MIX",/,2X,
     1"ADD NO ORGANISMS",/,2X,"DO NOT ADD S-9",/,2X,5A2,/)
   30 CONTINUE

C     TA 98

      NBUG(1) = "  "
      NBUG(2) = "98"
      CALL SLAB(NBUG,LT)

C     TA 100

      NBUG(1) = " 1"
      NBUG(2) = "00"
      CALL SLAB(NBUG,LT)

C     TA 1535

      NBUG(1) = "15"
      NBUG(2) = "35"
      CALL SLAB(NBUG,LT)
```

```
C     TA 1557

      NBUG(2) = "57"
      CALL SLAB(NBUG,LT)

C     TA 1558

      NBUG(2) = "58"
      CALL SLAB(NBUG,LT)

C --- READY MESSAGE
      TYPE " STERILITY CONTROL LABELS ARE READY IN 'ALABELS'"
      TYPE " (END PUN)"
      RETURN
      END
```

Appendix K.
SLAB.FR

```
C --- PROGRAM NAME:        SLAB.FR
C --- WRITTEN BY:          WARREN W JEDERBERG
C --- PURPOSE:             THIS SUBROUTINE IS SUPPORTING THE
C ---         WRITING OF STERILITY CONTROL LABELS FOR THE AMES
C ---         MUTAGENICITY ASSAY. USED BY DCLW.FR.

      SUBROUTINE SLAB (NBUG,LT)
      DIMENSION NBUG(2), LT(5)
      DO 10 I=1,4
      WRITE (1,1) NBUG,LT
 1    FORMAT (2X,"STERILITY CONTROL",/,2X,"TA",1X,2A2,/,
     12X,"ADD NO TOP AGAR",/,2X,"DO NOT ADD S-9",/,2X,5A2,/)
 10   CONTINUE
      RETURN
      END
```

LIST OF FIGURES

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Figure 11. Sample Label Texts for a Test Compound (with and without S-9).....

APPENDIX L (Figures)

Figure 1. Sample run of AMESLABELS.FR

```
) X AMESLABELS

 READY TO MAKE AMESLABELS:
 WAIT .................
 STERILITY CONTROL LABELS ARE READY IN 'ALABELS'
 QUALITY CONTROL LABELS ARE READY IN 'ALABELS'
 POSITIVE CONTROL LABELS ARE READY IN 'ALABELS'
 NEGATIVE CONTROL LABELS ARE READY IN 'ALABELS'

 HOW MANY TEST COMPOUNDS ?
*2

 WHAT IS COMPOUND #:  1 (AN/10) ?
CMPND #1

 HOW MANY DILUTIONS FOR THIS COMPOUND ?
*2

 DILUTIONAL CONTROL LABELS ARE READY IN 'ALABELS'
 LABELS FOR TEST COMPOUND #:  1 ARE READY IN 'ALABELS'

 WHAT IS COMPOUND #:  2 (AN/10) ?
CMPND #2

 HOW MANY DILUTIONS FOR THIS COMPOUND ?
*2

 DILUTIONAL CONTROL LABELS ARE READY IN 'ALABELS'
 LABELS FOR TEST COMPOUND #:  2 ARE READY IN 'ALABELS'
 NEGATIVE CONTROL LABELS ARE READY IN 'ALABELS'
 STERILITY CONTROL LABELS ARE READY IN 'ALABELS'
 (END RUN)
 ALL LABELS ARE READY IN 'ALABELS'

)
```

Figure 2. Sample Label Texts for Sterility Controls (MGA and Nutrient Broth)

STERILITY CONTROL
MGA PLATE
ADD WILD TYPE
DO NOT ADD S-9
24 HRS

STERILITY CONTROL
MGA PLATE
ADD WILD TYPE
DO NOT ADD S-9
24 HRS

STERILITY CONTROL
MGA PLATE
ADD NO ORGANISM
DO NOT ADD S-9
24 HRS

STERILITY CONTROL
MGA PLATE
ADD NO ORGANISM
DO NOT ADD S-9
24 HRS

STERILITY CONTROL
NUTRIENT BROTH
ADD NO ORGANISM
DO NOT ADD S-9

STERILITY CONTROL
NUTRIENT BROTH
ADD NO ORGANISM
DO NOT ADD S-9

Figure 3. Sample Label Texts for Sterility Controls (Top Agar)

STERILITY CONTROL
TOP AGAR
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TOP AGAR
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TOP AGAR
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TOP AGAR
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TOP AGAR
ADD NO ORGANISMS
ADD S-9
START RUN

STERILITY CONTROL
TOP AGAR
ADD NO ORGANISMS
ADD S-9
START RUN

STERILITY CONTROL
TOP AGAR
ADD NO ORGANISMS
ADD S-9
START RUN

STERILITY CONTROL
TOP AGAR
ADD NO ORGANISMS
ADD S-9
START RUN

Figure 4. Sample Label Texts for Sterility Controls (Diluent and His-Bio Mix)

STERILITY CONTROL
DILUENT
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
DILUENT
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
DILUENT
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
DILUENT
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
HIS-BIO MIX
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

STERILITY CONTROL
HIS-BIO MIX
ADD NO ORGANISMS
DO NOT ADD S-9
START RUN

Figure 5. Sample Label Texts for Sterility Controls (Microbial Strain Checks)

STERILITY CONTROL
TA 98
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 98
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 98
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 98
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 100
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 100
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 100
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

Figure 5. Sample Label Texts for Sterility Controls (Microbial Strain Checks) CONTINUED

STERILITY CONTROL
TA 1535
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1535
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1535
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1535
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1537
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1537
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1537
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1537
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

Figure 5. Sample Label Texts fcr Sterility Controls
(Microbial Strain Checks)
CONTINUED

STERILITY CONTROL
TA 1537
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1538
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1538
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

STERILITY CONTROL
TA 1539
ADD NO TOP AGAR
DO NOT ADD S-9
START RUN

Figure 6. Sample Label Texts for Microbial Nutrient Requirements

0.1 M HIS & 0.5 BIOTIN
TA: 1535, 1537, 1538
DO NOT ADD S-9
DO NOT ADD TOP AGAR

0.1 M HIS & 0.5 BIOTIN
TA: 98, 100, WT
DO NOT ADD S-9
DO NOT ADD TOP AGAR

0.5 BIOTIN ONLY
TA: 1535, 1537, 1538
DO NOT ADD S-9
DO NOT ADD TOP AGAR

0.5 BIOTIN ONLY
TA: 98, 100, WT
DO NOT ADD S-9
DO NOT ADD TOP AGAR

Figure 7. Sample Label Texts for Microbial Response to Environmental Stimuli

QUALITY CONTROL
UV LIGHT: 6 SECONDS
TA: 1535, 1537, 1538
DO NOT ADD S-9
DO NOT ADD TOP AGAR

QUALITY CONTROL
UV LIGHT: 8 SECONDS
TA: 98, 100, WT
DO NOT ADD S-9
DO NOT ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 98
ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 98
ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 100
ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 100
ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 1535
ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 1535
ADD TOP AGAR

Figure 7. Sample Label Texts for Microbial Response to Environmental Stimuli
CONTINUED

QUALITY CONTROL
CRYSTAL VIOLET
TA 1537
ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 1537
ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 1538
ADD TOP AGAR

QUALITY CONTROL
CRYSTAL VIOLET
TA 1538
ADD TOP AGAR

QUALITY CONTROL
AMPICILLIN
TA 98
DO NOT ADD TOP AGAR

QUALITY CONTROL
AMPICILLIN
TA 100
DO NOT ADD TOP AGAR

QUALITY CONTROL
AMPICILLIN
TA 1537
DO NOT ADD TOP AGAR

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9)

POSITIVE CONTROL
TA 98
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
BP 2 UG
ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 100
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1537
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1537
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1537
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1537
BP 2 UG
ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 1537
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1537
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
BP 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
BP 2 UG
ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 98
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 98
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 98
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 98
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 98
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 98
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 100
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 100
DMBA 20 UG
ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 100
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 100
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 100
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 100
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1537
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1537
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1537
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1537
DMBA 20 UG
ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 1537
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1537
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1538
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1538
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1538
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1538
DMBA 20 UG
ADD S-9

POSITIVE CONTROL
TA 1538
DMBA 20 UG
ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 98
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 98
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
AF 2 UG
ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 100
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
AF 2 UG
ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 1538
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 1538
AF 2 UG
ADD S-9

POSITIVE CONTROL
TA 100
MNNG 2 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 100
MNNG 2 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 100
MNNG 2 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 100
MNNG 2 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 100
MNNG 2 UG
DO NOT ADD S-9

Figure 8. Sample Label Texts for the Positive Control Responses of Microbial Strains (With and Without S-9) CONTINUED

POSITIVE CONTROL
TA 1535
MNNG 20 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 1535
MNNG 20 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 1535
MNNG 20 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 1535
MNNG 20 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 1535
MNNG 20 UG
DO NOT ADD S-9

POSITIVE CONTROL
TA 1535
MNNG 20 UG
DO NOT ADD S-9

Figure 9. Sample Label Texts for the Negative Control Responses of Microbial Strains (With and Without S-9)

NEGATIVE CONTROL
TA 98
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
DO NOT ADD S-9
START RUN

Figure 9. Sample Label Texts for the Negative Control Responses of Microbial Strains (With and Without S-9) CONTINUED

NEGATIVE CONTROL
TA 100
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
DO NOT ADD S-9
START RUN

Figure 9. Sample Label Texts for the Negative Control Responses of Microbial Strains (With and Without S-9) CONTINUED

NEGATIVE CONTROL
TA 1535
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
DO NOT ADD S-9
START RUN

Figure 9. Sample Label Texts for the Negative Control Responses of Microbial Strains (With and Without S-9) CONTINUED

NEGATIVE CONTROL
TA 1538
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1536
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
DO NOT ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
ADD S-9
START RUN

Figure 9. Sample Label Texts for the Negative Control Responses of Microbial Strains (With and Without S-9) CONTINUED

NEGATIVE CONTROL
TA 98
ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
ADD S-9
START RUN

NEGATIVE CONTROL
TA 98
ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
ADD S-9
START RUN

Figure 9. Sample Label Texts for the Negative Control Responses of Microbial Strains (With and Without S-9), CONTINUED

NEGATIVE CONTROL
TA 100
ADD S-9
START RUN

NEGATIVE CONTROL
TA 100
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1535
ADD S-9
START RUN

Figure 9. Sample Label Texts for the Negative Control Responses of Microbial Strains (With and Without S-9) CONTINUE

NEGATIVE CONTROL
TA 1537
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1537
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
ADD S-9
START RUN

Figure 9. Sample Label Texts for the Negative Control Responses of Microbial Strains (With and Without S-9) CONTINUED

NEGATIVE CONTROL
TA 1538
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
ADD S-9
START RUN

NEGATIVE CONTROL
TA 1538
ADD S-9
START RUN

Figure 10. Sample Label Texts for Dilutional Control Check for a Test Compound

DILUTIONAL CONTROL
COMPOUND: CMPND #1
ADD NO ORGANISMS
DO NOT ADD S-9

DILUTIONAL CONTROL
COMPOUND: CMPND #1
ADD NO ORGANISMS
DO NOT ADD S-9

DILUTIONAL CONTROL
COMPOUND: CMPND #1
ADD NO ORGANISMS
DO NOT ADD S-9

DILUTIONAL CONTROL
COMPOUND: CMPND #1
ADD NO ORGANISMS
DO NOT ADD S-9

DILUTIONAL CONTROL
COMPOUND: CMPND #1
ADD NO ORGANISMS
ADD S-9

DILUTIONAL CONTROL
COMPOUND: CMPND #1
ADD NO ORGANISMS
ADD S-9

DILUTIONAL CONTROL
COMPOUND: CMPND #1
ADD NO ORGANISMS
ADD S-9

DILUTIONAL CONTROL
COMPOUND: CMPND #1
ADD NO ORGANISMS
ADD S-9

Figure 11. Sample Label Texts for a Test Compound (With and Without S-9)

TEST SUBSTANCE
TA 1533
COMPOUND: CMPND #1
DILUTION: ?
DO NOT ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #1
DILUTION: ?
DO NOT ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #1
DILUTION: ?
DO NOT ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #1
DILUTION: ?
DO NOT ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #1
DILUTION: ?
DO NOT ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #1
DILUTION: ?
DO NOT ADD S-9

Figure 11. Sample Label Texts for a Test Compound (With and Without S-9)
CONTINUED

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #2
DILUTION: 2
ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #2
DILUTION: 2
ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #2
DILUTION: 2
ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #2
DILUTION: 2
ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #2
DILUTION: 2
ADD S-9

TEST SUBSTANCE
TA 1538
COMPOUND: CMPND #2
DILUTION: 2
ADD S-9

END

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